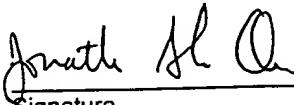


FORM PTO-1595 (Rev. 6-93)		Recordation Form Cover Sheet (Patents Only)	U.S. Department of Commerce Patent and Trademark Office
To the Honorable Asst. Commissioner for Patents. Please record the attached original documents or copy thereof			
1. Name of conveying party(ies): Chris Silvia		2. Name and address of receiving party(ies) Name: ICAgen, Incorporated Internal Address: Street Address: 4222 Emperor Boulevard, Ste. 460r City: Durham State: North Carolina ZIP: 27703	
Additional name(s) of conveying parties attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No.		Additional names and addresses attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
3. Nature of conveyance: <input checked="" type="checkbox"/> Assignment <input type="checkbox"/> Merger <input type="checkbox"/> Security Agreement <input type="checkbox"/> Change of Name <input type="checkbox"/> Other: Execution Date: 12/15/98			
4. Application Number(s) or Patent Numbers. If this document is being filed together with a new application, the execution date of the application is:			
A. Patent Application No(s): 09/176,664		B. Patent No(s):	
Additional numbers attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
5. Name and address of party to whom correspondence concerning document should be mailed: Name: Jonathan Alan Quine TOWNSEND AND TOWNSEND AND CREW LLP Two Embarcadero Center, 8 th Floor San Francisco, California 94111-3834 (415) 576-0200		6. Total number of applications and patents involved 1 7. Total fee (37 CFR 3.41): \$40.00 <input type="checkbox"/> Enclosed <input checked="" type="checkbox"/> Charge Fees to Deposit Account <input checked="" type="checkbox"/> Charge any additional fees associated with this paper or during the pendency of this application, or credit any overpayment, to deposit account. 8. Deposit account number: 20-1430	
DO NOT USE THIS SPACE			
9. Statement and signature. <i>To the best of my knowledge and belief, the foregoing is true and correct and any attached copy is a true copy of the original document.</i>			
Jonathan Alan Quine Name of Person Signing Atty Reg. No. 41,261		 <u>2-10-89</u> Date	
10. Change Correspondence Address to that of Part 5? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
OMB No. 0651-0011 (exp. 4/94) Do not detach this portion			
Mail documents to be recorded with required cover to: Asst. Commissioner for Patents Box: Assignments Washington, D.C. 20231			

ASSIGNMENT OF PATENT APPLICATION

SOLE

WHEREAS, Chris Silvia of 3105 Broomsedge Way, Durham, North Carolina 27712, hereinafter referred to as "Assignor," are the inventor of the invention described and set forth in the below identified application for United States Letters Patent:

Title of the Invention: **A pH SENSITIVE POTASSIUM CHANNEL
IN SPERMATOCYTES**

Date(s) of execution of Declaration: Dec 15 1998

Filing date: **October 21, 1998**; Application No.: **09/176,664**; and

WHEREAS, ICAgen, Incorporated a Delaware corporation, located at **4222 Emperor Boulevard, Ste. 460, Durham, North Carolina 27703**, hereinafter referred to as "Assignee," is desirous of acquiring an interest in the invention and application and in any Letters Patent and Registrations which may be granted on the same;

For good and valuable consideration, receipt of which is hereby acknowledged by Assignors, Assignors have assigned, and by these presents do assign to Assignee all right, title and interest in and to the invention and application and to all foreign counterparts (including patent, utility model and industrial designs), and in and to any Letters Patent and Registrations which may hereafter be granted on the same in the United States and all countries throughout the world, and to claim the priority from the application as provided by the Paris Convention. The right, title and interest is to be held and enjoyed by Assignee and Assignee's successors and assigns as fully and exclusively as it would have been held and enjoyed by Assignors had this assignment not been made, for the full term of any Letters Patent and Registrations which may be granted thereon, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof.

Assignors further agree that they will, without charge to Assignee, but at Assignee's expense, (a) cooperate with Assignee in the prosecution of U.S. Patent applications and foreign counterparts on the invention and any improvements, (b) execute, verify, acknowledge and deliver all such further papers, including patent applications and instruments of transfer and (c) perform such other acts as Assignee lawfully may request to obtain or maintain Letters Patent and Registrations for the invention and improvements in any and all countries, and to vest title thereto in Assignee, or Assignee's successors and assigns.

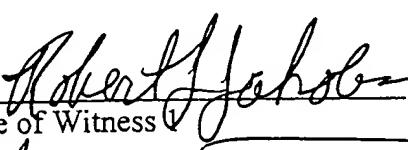
IN TESTIMONY WHEREOF, Assignors have signed their names on the dates indicated.

Date: 12/15/98

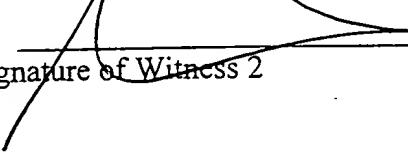

Chris Silvia

SIGNATURE WITNESSED BY:

(1) Date: 12/16/98

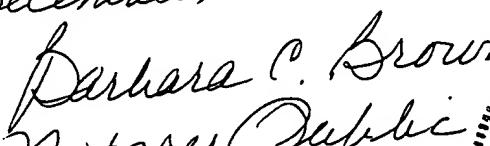

Signature of Witness 1

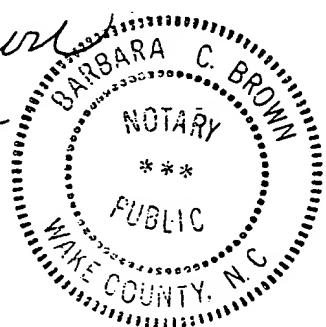
(2) Date: 12/16/98


Signature of Witness 2

182586

Signed and witnessed in my presence
this 16th day of December, 1998.


Barbara C. Brown
Notary Public
My commission expires 1-28-01



TOWNSEND & CO.
CREW



MAY 28, 1999 JUN -4 AM 8:24

PTAS
TOWNSEND AND TOWNSEND AND CREW LLP
JONATHAN ALAN QUINE
TWO EMBARCADERO CENTER, 8TH FLOOR
SAN FRANCISCO, CALIFORNIA 94111-3834

18512-00012045
UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
A. Parent



100986824A

jc530 U.S. PTO
09/519076
03/06/00

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 02/22/1999

REEL/FRAME: 9813/0173
NUMBER OF PAGES: 4

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
SALKOFF, LAWRENCE

DOC DATE: 01/15/1999

ASSIGNOR:
SCHREIBER, MATTHEW

DOC DATE: 01/15/1999

ASSIGNEE:
WASHINGTON UNIVERSITY, THE
ONE BROOKINGS DRIVE
ST. LOUIS, MISSOURI 63130

SERIAL NUMBER: 09176664
PATENT NUMBER:

FILING DATE: 10/21/1998
ISSUE DATE:

TARA WASHINGTON, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231



100986824B

AUTHORIZATION TO CHARGE ADDITIONAL FEES TO DEPOSIT ACCOUNT

MAY 28, 1999

jc530 U.S. PTO
09/19/96 03/06/00

TO: OFFICE OF FINANCE
FROM: ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS
SUBJECT: DEPOSIT ACCOUNT CHARGE(S)

CHARGE THE DEPOSIT ACCOUNT LISTED BELOW ADDITIONAL FEE(S) AS INDICATED BELOW. AUTHORIZATION TO CHARGE ADDITIONAL FEES HAS BEEN PROVIDED PER THE ATTACHED COVER SHEET, OR BY DIRECT CONTACT WITH THE CUSTOMER.

DEPOSIT ACCOUNT NUMBER: 201430
PROPERTY NUMBER: 09176664

RECORDING FEES:

FEE CODE: 581 AMOUNT: 40

IF YOU HAVE ANY QUESTIONS REGARDING THIS NOTICE, YOU MAY CONTACT THE INDIVIDUAL WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723.

TARA WASHINGTON, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

TRADEMARK SERVICE FEES: FEE CODE:

RECORDING FIRST MARK	481
RECORDATION SECOND AND	482
SUBSEQUENT MARK IN SAME DOCUMENT	
LABOR CHARGES FOR SERVICES PER HOURS	484
OR FRACTION THEREOF	
UNSPECIFIED OTHER SERVICES	485

PATENT SERVICE FEES:

RECORDING EACH PATENT ASSIGNMENT, 581

AGREEMENT, OTHER PAPER, PER PROPERTY
LABOR CHARGES FOR SERVICES PER HOUR 584
(\$30) OR FRACTION THEREOF
UNSPECIFIED OTHER SERVICES 585

03-17-1999

Attorney Docket No. 018512-000120



100986824

Recordation Form Cover Sheet
(Patents Only)U.S. Department of Commerce
Patent and Trademark Office

or Patents. Please record the attached original documents or copy thereof

1. Name of conveying party(ies):

Lawrence Salkoff and Matthew Schreiber

Additional name(s) of conveying parties attached? Yes
 No.

2-99-99

3. Nature of conveyance:

Assignment Merger
 Security Agreement Change of Name
 Other:

Execution Date: 1/15/99 and 1/15/99

2. Name and address of receiving party(ies)

Name: The Washington University

Internal Address:

Street Address: One Brookings Drive

City: St. Louis State: Missouri ZIP: 63130

Additional names and addresses attached? Yes No

4. Application Number(s) or Patent Numbers.

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No(s): 09/176,664

B. Patent No(s):

Additional numbers attached? Yes No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Jonathan Alan Quine
 TOWNSEND AND TOWNSEND AND CREW LLP
 Two Embarcadero Center, 8th Floor
 San Francisco, California 94111-3834
 (415) 576-0200

6. Total number of applications and patents involved 1

7. Total fee (37 CFR 3.41): \$40.00

 Enclosed Charge Fees to Deposit Account Charge any additional fees associated with this paper or during the pendency of this application, or credit any overpayment, to deposit account.

8. Deposit account number: 20-1430

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing is true and correct and any attached copy is a true copy of the original document.

Jonathan Alan Quine
 Name of Person Signing

Jonathan Alan Quine
 Signature

Date

2-10-99

Atty. Reg. No. 41,261

Total number of pages including cover sheet, attachments and document 4

10. Change Correspondence Address to that of Part 5? Yes No

OMB No. 0651-0011 (exp. 4/94)

Do not detach this portion

Mail documents to be recorded with required cover to:

Asst. Commissioner for Patents
 Box: Assignments
 Washington, D.C. 20231

195672



Attorney Docket No. 018512-000120

ASSIGNMENT OF PATENT APPLICATION

JOINT

WHEREAS, Lawrence Salkoff of 6327 Alamo Avenue, Clayton, Missouri 63105 and Matthew Schreiber of 7561 York Drive., Apt. 2N, Clayton, Missouri 63105, hereinafter referred to as "Assignors," are the inventors of the invention described and set forth in the below identified application for United States Letters Patent:

Title of the Invention: **A pH SENSITIVE POTASSIUM CHANNEL
IN SPERMATOCYTES**

Date(s) of execution of Declaration: 1-15-99 (both)

Filing date: **October 21, 1998**; Application No.: **09/176,664**; and

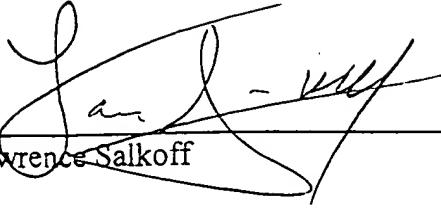
WHEREAS, The Washington University a Missouri corporation, located at **One Brookings Drive, St. Louis, Missouri 63130**, hereinafter referred to as "Assignee," is desirous of acquiring an interest in the invention and application and in any Letters Patent and Registrations which may be granted on the same;

For good and valuable consideration, receipt of which is hereby acknowledged by Assignors, Assignors have assigned, and by these presents do assign to Assignee all right, title and interest in and to the invention and application and to all foreign counterparts (including patent, utility model and industrial designs), and in and to any Letters Patent and Registrations which may hereafter be granted on the same in the United States and all countries throughout the world, and to claim the priority from the application as provided by the Paris Convention. The right, title and interest is to be held and enjoyed by Assignee and Assignee's successors and assigns as fully and exclusively as it would have been held and enjoyed by Assignors had this assignment not been made, for the full term of any Letters Patent and Registrations which may be granted thereon, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof.

Assignors further agree that they will, without charge to Assignee, but at Assignee's expense, (a) cooperate with Assignee in the prosecution of U.S. Patent applications and foreign counterparts on the invention and any improvements, (b) execute, verify, acknowledge and deliver all such further papers, including patent applications and instruments of transfer and (c) perform such other acts as Assignee lawfully may request to obtain or maintain Letters Patent and Registrations for the invention and improvements in any and all countries, and to vest title thereto in Assignee, or Assignee's successors and assigns.

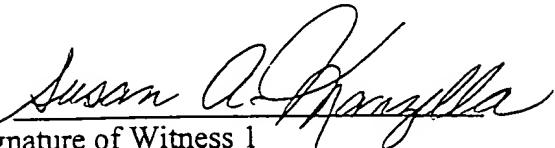
IN TESTIMONY WHEREOF, Assignors have signed their names on the dates indicated.

Date: 1-15-89

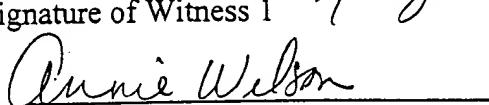

Lawrence Salkoff

SIGNATURE WITNESSED BY:

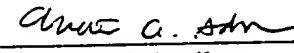
(1) Date: 1/15/99


Signature of Witness 1

(2) Date: 1/15/99

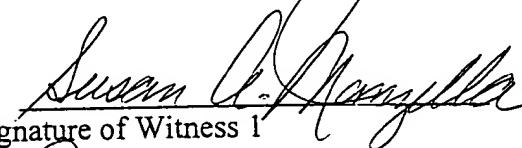

Signature of Witness 2

Date: 1-15-99

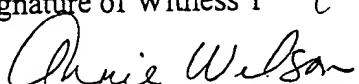

Matthew Schreiber

SIGNATURE WITNESSED BY:

(1) Date: 1/15/99


Signature of Witness 1

(2) Date: 1/15/99


Signature of Witness 2

STATE OF MISSOURI)
)
COUNTY OF ST. LOUIS)

On this 15th day of January, 1998, before me, a Notary Public, within and for the State of Missouri personally appeared Lawrence Salkoff, to me known to be one of the persons described in and who executed the foregoing assignment and acknowledged that he executed the same as his free act and deed.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

Mary M Schurwan
Notary Public

MARY M. SCHURWAN
Notary Public - Notary Seal
STATE OF MISSOURI
St. Louis County
My Commission Expires: Jan. 4, 2002

STATE OF MISSOURI)
)
COUNTY OF ST. LOUIS)

On this 15th day of January, 1998, before me, a Notary Public, within and for the State of Missouri personally appeared Matthew Schreiber, to me known to be one of the persons described in and who executed the foregoing assignment and acknowledged that he executed the same as his free act and deed.

In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

Mary M Schurwan
Notary Public

MARY M. SCHURWAN
Notary Public - Notary Seal
STATE OF MISSOURI
St. Louis County
My Commission Expires: Jan. 4, 2002

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)
COUNTY OF ST. LOUIS)

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Notary Public - Notary Seal
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St. Louis County
My Commission Expires: Jan. 4, 2002

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)
COUNTY OF ST. LOUIS)

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In witness whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

Mary M Schurwan
Notary Public

MARY M. SCHURWAN
Notary Public - Notary Seal
STATE OF MISSOURI
St. Louis County
My Commission Expires: Jan. 4, 2002

CERTIFICATE UNDER 37 C.F.R. § 3.73(b)

Applicant: Salkoff et al.

Application No.: 09/176,664 Filed: 10/21/98

For: PH SENSITIVE POTASSIUM CHANNEL IN SPERMATOCYTES

The Washington University, a university
(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

certifies that it is assignee of the patent application identified above by virtue of either:

A. An assignment from the inventor(s) of the patent application identified above. The assignment was recorded in the Patent and Trademark Office at Reel , Frame(s) , or for which a copy thereof is attached.

OR

B. A chain of title from the inventor(s), of the patent application identified above, to the current assignee as shown below:

1. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at
Reel , Frame , or for which a copy thereof is attached.
2. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at
Reel , Frame , or for which a copy thereof is attached.
3. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at
Reel , Frame , or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet.

Copies of assignments or other documents in the chain of title are attached.

The undersigned (whose title is supplied below) is empowered to act on behalf of the assignee.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date : 1/22/99
Name : _____
Title : _____
Signature: Andrew Neighbour

182613 Andrew Neighbour, Ph.D.
 Associate Vice Chancellor
 For Technology Management